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FLOOD INSURANCE STUDY

ORIGINAL

TOWNSHIP OF FAIRFIELD, NEW JERSEY
ESSEX COUNTY

JUNE 3, 1986

Federal Emergency Management Agency

COMMUNITY NUMBER - 345295

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PUBLISHED SEPARATELY:

Flood Insurance Rate Map Index
Flood Insurance Rate Map

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FLOOD INSURANCE STUDY
TOWNSHIP OF FAIRFIELD, NEW JERSEY

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the Township of Fairfield, Essex County, New Jersey, and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood risk data for various areas of the community that will be used to establish actuarial flood insurance rates and assist the community in their efforts to promote sound flood plain management. Minimum flood plain management requirements for participation in the National Flood Insurance Program are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, flood plain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the state (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses in this study represent a revision of the original analyses by the Soil Conservation Service. The updated version was prepared by the New Jersey Department of Environmental Protection for the Federal Emergency Management Agency (FEMA), under Contract No. H-3959. The hydrologic and hydraulic analyses in the updated study were computed by O'Brien & Gere Engineers, Inc., under subcontract to the New Jersey Department of Environmental Protection. This work was completed in December 1983.

1.3 Coordination

On March 11, 1976, streams requiring detailed study were identified at an initial Consultation and Coordination Officer's (CCO) meeting attended by representatives of FEMA, the Township of Fairfield, and the New Jersey Department of Environmental Protection (the study contractor). A search for basic information was made at all levels of government. On June 19, 1985, the results of the study were reviewed at a final CCO meeting held with representatives of FEMA, the township, the study contractor, and O'Brien & Gere Engineers, Inc. (the subcontractor).

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2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the incorporated area of the Township of Fairfield, Essex County, New Jersey. The area of study is shown on the Vicinity Map (Figure 1).

The Passaic River, Deepavaal Brook, and Green Brook were studied by detailed methods for their entire lengths within the corporate limits. The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction through December 1988.

2.2 Community Description

The Township of Fairfield is located in the extreme northwestern portion of Essex County in northern New Jersey. It is bordered by the Borough of Lincoln Park to the north, the Township of Wayne to the east, the Boroughs of North Caldwell and West Caldwell and the Township of East Hanover to the south, and the Township of Montville to the west. The total land area contained within the corporate limits of Fairfield is 10.4 square miles.

The population of Fairfield was estimated at 7,500 in 1977, an increase from 4,400 in 1970. Fairfield has recently become highly industrialized. This accounts for the large increase in population in only seven years.

The township lies within the area known as the central basin of the Triassic Lowlands Province. This area has a relatively flat topography.

The Passaic River flows in a clockwise direction as it forms the western and northern boundaries of Fairfield. Deepavaal Brook flows northeast, drains most of the township's industrial area, and discharges into the Passaic River near the eastern tip of the township. Green Brook, a tributary to Deepavaal Brook, flows to the northwest.

Fairfield was formed as a township from the Township of Caldwell by referendum on November 5, 1963. In June 1964, the Township of Fairfield became the Borough of Fairfield (Reference 1); however, in 1976, Fairfield returned to the title of a township.

2.3 Principal Flood Problems

The low-lying area of the wide flood plain of the Passaic River comprises much of Fairfield and forms a large natural storage area. Floodwaters from the Pompton River enter this storage area from the north near the

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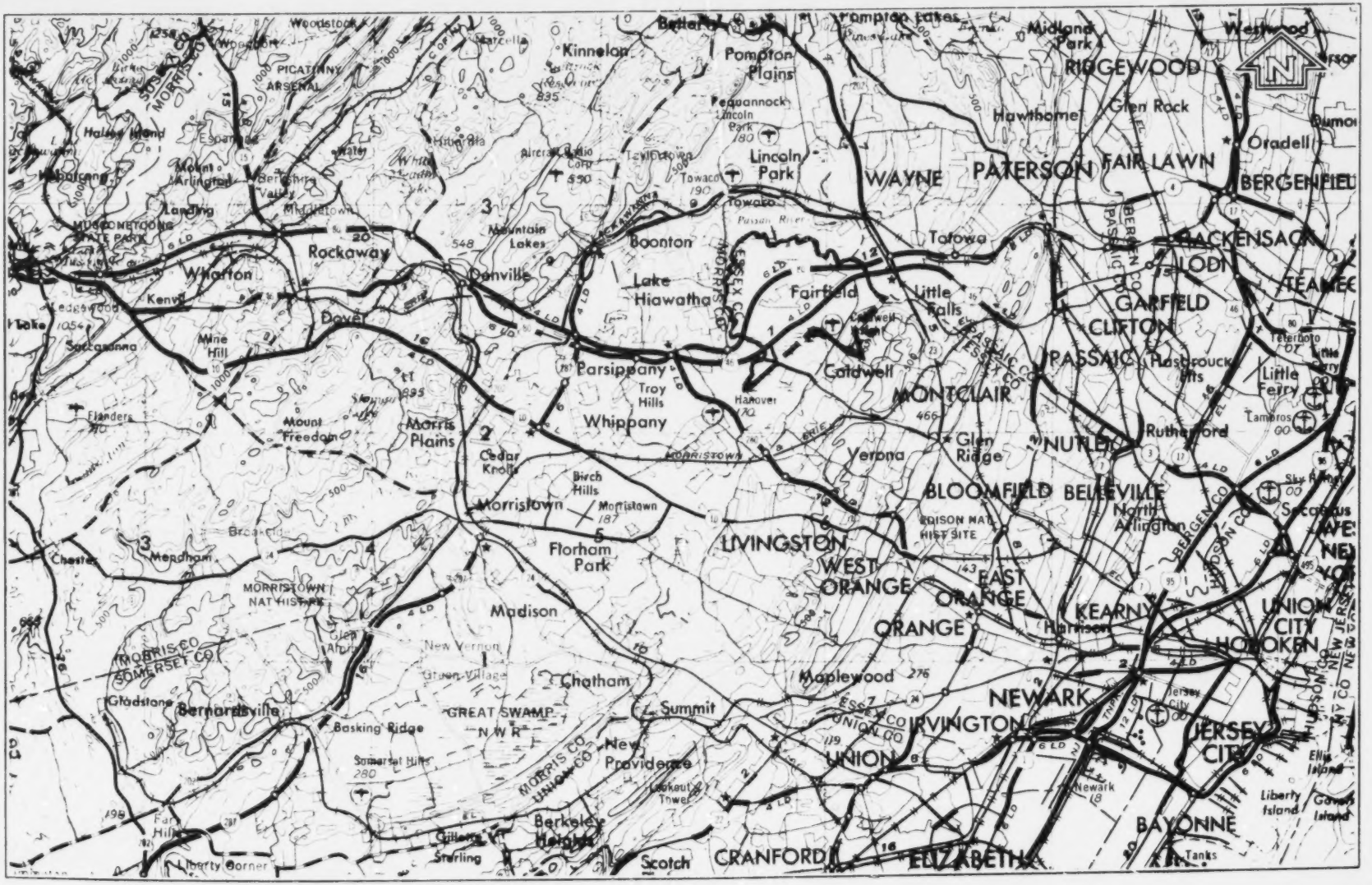

FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF FAIRFIELD, NJ
(ESSEX CO.)

APPROXIMATE SCALE

4 0 4 8 12 MILES

VICINITY MAP

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Two Bridges area. During large floods, Beatties Dam, which is located above Little Falls, constricts the river section enough to cause floodwaters from the Pompton River to enter the Passaic River, flowing in both an upstream and downstream direction at the point where the two rivers join (Reference 2). The storage area thus contains flows from the Passaic River and the Pompton River.

The flood peaks from the Pompton River are reduced and retarded somewhat due to the lake and reservoir storage on the northern upland tributaries and the valley storage between Pompton Lakes and Two Bridges. According to a U. S. Army Corps of Engineers (COE) analysis, the Pompton River peak reaches the Passaic River approximately 12 to 18 hours before the Passaic River peaks (Reference 3). The southern upland tributaries of the Passaic River are as precipitous as the northern tributaries, but they join the Passaic River at widely separated points which results in desynchronization of their peaks. They are greatly affected by the large valley storage in the lower reaches and are, therefore, low flood producers into the Passaic River flood plains.

The greatest floods in the Passaic River basin occurred in November 1810, July 1865, September 1882, March 1902, October 1903, March 1936, September 1938, July 1945, August 1955, October 1955, and May 1968.

2.4 Flood Protection Measures

There are no flood protection structures on streams in the area. A township ordinance restricts construction in flood plain areas in accordance with FEMA initial land-use regulation requirements. The State of New Jersey has adopted rules, regulations, and minimum standards concerning development and use of land within flood hazard areas.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude which are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for flood plain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10, 2, 1, and 0.2 percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (1 percent chance of annual exceedence) in any 50-year period is approximately 40

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percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for each flooding source studied in detail affecting the community.

Peak discharges for the 10-, 50-, 100-, and 500-year floods on the Passaic River were determined in previous studies by the COE and were used in this study (References 3 and 4). The frequency-discharge relationship was based on discharge data recorded at Paterson and Little Falls (drainage area 762 square miles) by the U. S. Geological Survey (USGS). Continuous discharge records for this portion of the Passaic River date back to 1897. The COE used the standard log-Pearson Type III method, as outlined by the Water Resources Council, in their hydrologic analysis of these records (Reference 5). Frequencies for the rare floods were based on an adjustment to account for the higher floods associated with hurricanes.

For the portion of Deepavaal Brook upstream of the confluence of Green Brook, discharges were determined using unpublished COE data developed in 1983. The COE data included hydrographs and rating curves developed for the Passaic River near the upstream corporate limits. This analysis incorporates a diversion of flows from the Passaic River into Deepavaal Brook. Discharges from Green Brook and the upstream portion of Deepavaal Brook were combined to obtain the discharges for the downstream portion of Deepavaal Brook.

For Green Brook, hydrologic analyses were based on the method for estimating flood-peak magnitudes developed in Special Report 38 (Reference 6). This method is based on a multiple regression analysis used to develop mathematical relationships between flood discharges at the various recurrence intervals (2, 10, 50, and 100 years) obtained from gaging station data and hydrologic characteristics. Flood information from 103 sites was used in performing the analysis. Hydrologic parameters included stream drainage area, main channel slope, surface storage area, and an index of manmade impervious cover based on basin population and development conditions. The 500-year discharge was extrapolated from the lower frequency floods.

A summary of drainage area-peak discharge relationships for the streams studied by detailed methods is shown in Table 1, "Summary of Discharges."

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TABLE 1 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
PASSAIC RIVER					
At the confluence of the Pompton River	741	5,558	6,502	7,160	9,000
DEEPAVAAL BROOK					
At its confluence with the Passaic River	6.85	1,000	1,540	1,860	2,570
Upstream of the confluence of Green Brook	1.26	340	470	550	690
GREEN BROOK					
At its confluence with Deepavaal Brook	3.97	660	1,070	1,310	1,880

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

Cross-section data were obtained from aerial photographs (Reference 7); below-water sections were obtained by field measurement. Cross sections were located at close intervals above and below bridges and culverts in order to compute the significant backwater effects of these structures in the highly urbanized areas. All bridges and culverts were surveyed to obtain elevation data and structural geometry.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 4.2), selected cross section locations are also shown on the Flood Boundary and Floodway Map (Exhibit 2).

Water-surface elevations of floods of the selected recurrence intervals were computed using the COE HEC-2 step-backwater computer program (Reference 8). Flood profiles were drawn showing computed water-surface elevations for floods of the selected recurrence intervals. Starting water-surface elevations for the Passaic River were obtained from the Flood Insurance Study for the Township of Wayne (Reference 9). Starting water-surface elevations for Deepavaal Brook and Green Brook were determined by the slope/area method.

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Channel roughness factors (Manning's "n") used in the hydraulic computations were assigned on the basis of field inspection of flood plain areas. The channel "n" values for the Passaic River ranged from 0.030 to 0.045, and the overbank "n" values ranged from 0.040 to 0.090. For Deepavaal Brook, the channel "n" values ranged from 0.025 to 0.050, and the overbank "n" values ranged from 0.030 to 0.100. The channel "n" values for Green Brook ranged from 0.030 to 0.080, and the overbank "n" values ranged from 0.060 to 0.200.

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD). Elevation reference marks used in this study are shown on the maps.

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

4.0 FLOOD PLAIN MANAGEMENT APPLICATIONS

The National Flood Insurance Program encourages State and local governments to adopt sound flood plain management programs. Therefore, each Flood Insurance Study produces maps designed to assist communities in developing flood plain management measures.

4.1 Flood Boundaries

To provide a national standard without regional discrimination, the 1 percent annual chance (100-year) flood has been adopted by FEMA as the base flood for flood plain management purposes. The 0.2 percent annual chance (500-year) flood is employed to indicate additional areas of flood risk in the community. For each stream studied in detail, the 100- and 500-year flood plain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps (References 10 and 11).

The 100- and 500-year flood plain boundaries are shown on the Flood Boundary and Floodway Map (Exhibit 2). In cases where the 100- and 500-year flood plain boundaries are close together, only the 100-year flood plain boundary has been shown. Small areas within the flood plain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

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4.2 Floodways

Encroachment on flood plains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of flood plain management involves balancing the economic gain from flood plain development against the resulting increase in flood hazard. For purposes of the National Flood Insurance Program, a floodway is used as a tool to assist local communities in this aspect of flood plain management. Under this concept, the area of the 100-year flood plain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent flood plain areas, that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. Minimum federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. However, the State of New Jersey has established criteria limiting the increase in flood heights to 0.2 foot. Thus, floodways having no more than a 0.2-foot surcharge have been delineated for this study. The floodways in this study are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodways presented in this study were computed on the basis of equal conveyance reduction from each side of the flood plain. The results of these computations are tabulated at selected cross sections for each stream segment for which a floodway is computed (Table 2).

As shown on the Flood Boundary and Floodway Map (Exhibit 2), the floodway boundaries were computed at cross sections. Between cross sections, the boundaries were interpolated. In cases where the floodway and 100-year flood plain boundaries are either close together or collinear, only the floodway boundary has been shown. Portions of the floodway widths for the Passaic River and Deepavaal Brook extend beyond the corporate limits.

The area between the floodway and 100-year flood plain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the flood plain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood by more than 0.2 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to flood plain development are shown in Figure 2.

Near the mouths of streams studied in detail, floodway computations are made without regard to flood elevations on the receiving water body. Therefore, "Without Floodway" elevations presented in Table 2 for certain downstream cross sections of Deepavaal Brook and Green Brook are lower than the regulatory flood elevations in that area, which must take into account the 100-year flooding due to backwater from other sources.

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FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Passaic River								
A	167,470	857/150	5,620	3.9	171.0	171.0	171.2	0.2
B	168,330	845/120	6,758	3.2	171.3	171.3	171.5	0.2
C	170,140	1120/630	11,073	2.0	171.7	171.7	171.9	0.2
D	170,790	740/205	6,550	3.3	171.8	171.8	172.0	0.2
E	171,620	440/224	6,095	3.6	172.3	172.3	172.5	0.2
F	172,120	400/200	5,920	3.7	172.5	172.5	172.5	0.0
G	172,980	560/140	5,702	3.8	172.5	172.5	172.6	0.1
H	173,980	807/85	9,260	2.3	173.0	173.0	173.2	0.2
I	175,300	990/512	11,066	0.6	173.3	173.3	173.5	0.2
J	187,800	2840/2240	29,594	0.2	173.3	173.3	173.5	0.2
K	192,800	3510/1550	32,670	0.2	173.3	173.3	173.5	0.2
L	201,150	5500/4700	52,799	0.1	173.3	173.3	173.5	0.2
M	219,600	2664/2580	20,450	0.4	173.3	173.3	173.5	0.2
N	224,000	1605/1425	14,262	0.5	173.3	173.3	173.5	0.2
O	230,400	1057/370	6,988	1.0	173.3	173.3	173.5	0.2

[1]Feet above confluence with Newark Bay
[2]Width/width within corporate limits

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF FAIRFIELD, NJ

(ESSEX CO.)

FLOODWAY DATA

PASSAIC RIVER

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FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Deepavaal Brook								
A	720	101	507	3.7	171.5	166.4[3]	166.6	0.2
B	1,845	335	1,307	1.4	171.5	166.9[3]	167.1	0.2
C	2,915	248	694	2.7	171.5	168.7[3]	168.8	0.1
D	3,565	483	1,993	0.9	171.5	169.0[3]	169.1	0.1
E	4,830	173	749	2.5	171.5	169.6[3]	169.8	0.2
F	6,056	513	2,497	0.7	171.5	170.5[3]	170.6	0.1
G	7,966	1,348	1,708	1.1	171.5	171.1[3]	171.2	0.1
H	10,436	681	2,985	0.6	171.8	171.8	171.9	0.1
I	11,711	530	1,802	1.0	172.1	172.1	172.2	0.1
J	14,351	1,067[2]	3,376	0.2	172.8	172.8	172.9	0.1
K	15,601	1,068[2]	3,846	0.1	172.8	172.8	172.9	0.1
L	16,839	700[2]	3,221	0.2	172.8	172.8	172.9	0.1
M	17,626	624[2]	2,903	0.2	172.8	172.8	172.9	0.1
N	18,634	199	801	0.7	172.9	172.9	173.0	0.1
O	19,439	200	632	0.9	172.9	172.9	173.1	0.2

[1]Feet above confluence with Passaic River
[2]This width extends beyond corporate limits
[3]Elevation computed without consideration of backwater from Passaic River

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF FAIRFIELD, NJ
(ESSEX CO.)

FLOODWAY DATA

DEEPAVAAL BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Green Brook								
A	540	607	2,095	0.6	172.4	172.0[2]	172.2	0.2
B	1,380	423	1,152	1.1	172.4	172.1[2]	172.3	0.2
C	1,785	422	655	2.0	172.4	172.3[2]	172.5	0.2
D	2,760	463	524	2.5	173.2	173.2	173.4	0.2
E	4,670	77	314	4.2	176.5	176.5	176.7	0.2
F	5,780	48	136	9.6	187.9	187.9	187.9	0.0
G	6,880	76	159	8.2	215.6	215.6	215.6	0.0

[1]Feet above confluence with Deepavaal Brook

[2]Elevation computed without consideration of backwater from Deepavaal Brook

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF FAIRFIELD, NJ

(ESSEX CO.)

FLOODWAY DATA

GREEN BROOK

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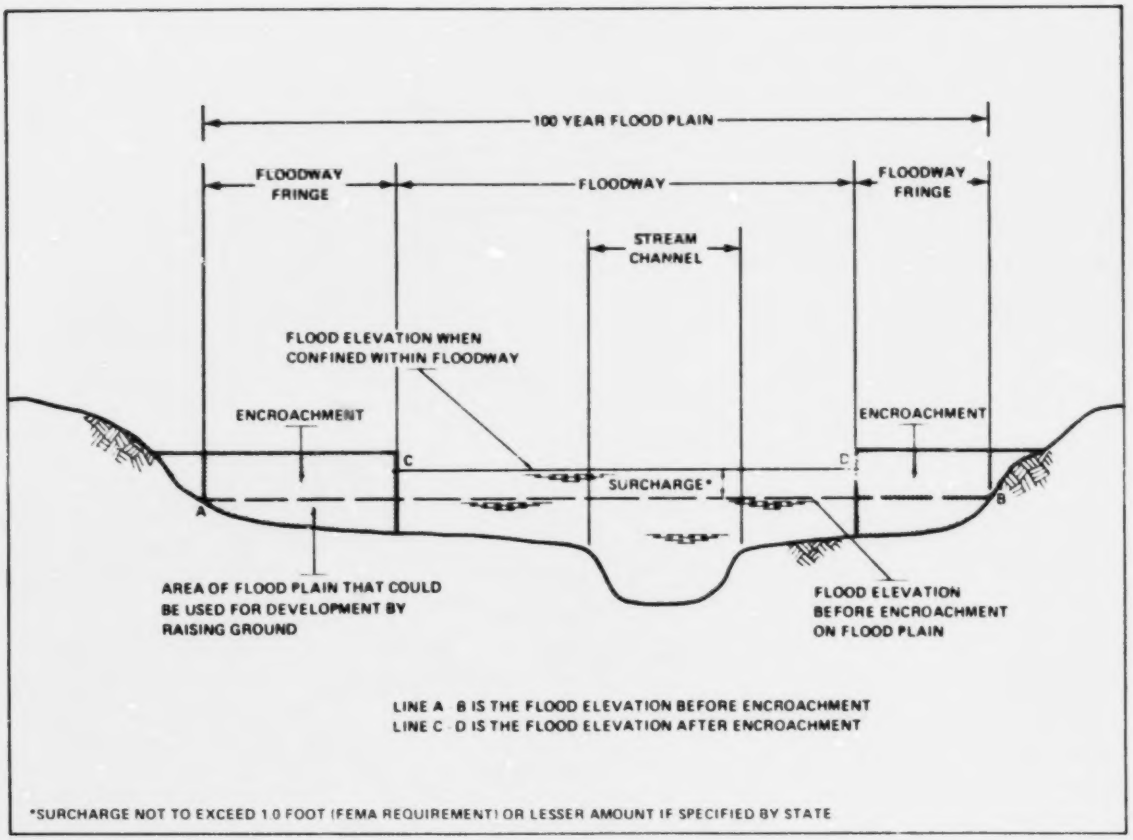
100 YEAR FLOOD PLAIN
FLOODWAY FRINGE
FLOODWAY
FLOODWAY FRINGE
STREAM CHANNEL
FLOOD ELEVATION WHEN CONFINED WITHIN FLOODWAY
ENCROACHMENT
ENCROACHMENT
C
D
SURCHARGE*
A
B
AREA OF FLOOD PLAIN THAT COULD BE USED FOR DEVELOPMENT BY RAISING GROUND
FLOOD ELEVATION BEFORE ENCROACHMENT ON FLOOD PLAIN
LINE A B IS THE FLOOD ELEVATION BEFORE ENCROACHMENT
LINE C D IS THE FLOOD ELEVATION AFTER ENCROACHMENT
*SURCHARGE NOT TO EXCEED 1.0 FOOT (FEMA REQUIREMENT) OR LESSER AMOUNT IF SPECIFIED BY STATE

FLOODWAY SCHEMATIC Figure 2

5.0 INSURANCE APPLICATION

To establish actuarial insurance rates, data from the engineering study must be transformed into flood insurance criteria. This process includes the determination of reaches, Flood Hazard Factors, and flood insurance zone designations for each flooding source studied in detail in the Township of Fairfield.

5.1 Reach Determinations

Reaches are defined as sections of flood plain that have relatively the same flood hazard, based on the average weighted difference in water-surface elevations between the 10- and 100-year floods. This difference may not have a variation greater than that indicated in the following tabulation for more than 20 percent of the reach:

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Average Difference Between 10- and 100-Year Floods	Variation
Less than 2 feet	0.5 foot
2 to 7 feet	1.0 foot
7.1 to 12 feet	2.0 feet
More than 12 feet	3.0 feet

The locations of the reaches determined for the flooding sources of the Township of Fairfield are shown on the Flood Profiles (Exhibit 1) and summarized in Table 3.

5.2 Flood Hazard Factors

The Flood Hazard Factor (FHF) is used to establish relationships between depth and frequency of flooding in any reach. This relationship is then used with depth-damage relationships for various classes of structures to establish actuarial insurance rate tables.

The FHF for a reach is the average weighted difference between the 10- and 100-year flood water-surface elevations rounded to the nearest one-half foot, multiplied by 10, and shown as a three-digit code. For example, if the difference between water-surface elevations of the 10- and 100-year floods is 0.7 foot, the FHF is 005; if the difference is 1.4 feet, the FHF is 015; if the difference is 5.0 feet, the FHF is 050. When the difference between the 10- and 100-year flood water-surface elevations is greater than 10.0 feet, it is rounded to the nearest whole foot.

5.3 Flood Insurance Zones

Flood insurance zones and zone numbers are assigned based on the type of flood hazard and the FHF, respectively. A unique zone number is associated with each possible FHF, and varies from 1 for a FHF of 005 to a maximum of 30 for a FHF of 200 or greater.

Zones A2, A3, A7, and A8: Special Flood Hazard Areas inundated by the 100-year flood; with base flood elevations shown, and zones subdivided according to FHFs.

Zone B: Areas between the Special Flood Hazard Areas and the limits of the 500-year flood; areas that are protected from the 100- or 500-year floods by dike, levee, or other water control structure; areas subject to certain types of 100-year shallow flooding where depths are less than 1.0 foot; and areas subject to 100-year flooding from sources with drainage areas less than 1 square mile. Zone B is not subdivided.

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FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Passaic River							
Reach 1	02,04	-3.6	-0.9	+2.9	035	A7	Varies
Reach 2	01,02, 03,04	-3.8	-1.0	+3.5	040	A8	Varies
Deepavaal Brook							
Reach 1	03,04	-1.1	-0.5	-2.8	010	A2	Varies
Green Brook							
Reach 1	04	-1.1	-0.4	+0.9	010	A2	Varies
Reach 2	04	-1.3	-0.4	+0.9	015	A3	Varies

[1]Flood Insurance Rate Map Panel
[2]Weighted Average
[3]Rounded to the nearest foot - see map

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF FAIRFIELD, NJ
(ESSEX CO.)

FLOOD INSURANCE ZONE DATA

PASSAIC RIVER · DEEPAVAAL BROOK · GREEN BROOK

Zone C: Areas of minimal flooding; not subdivided.

Flood elevation differences, FHFs, flood insurance zones, and base flood elevations for the flooding sources studied in detail in the community are shown in Table 3.

5.4 Flood Insurance Rate Map Description

The Flood Insurance Rate Map for the Township of Fairfield is, for insurance purposes, the principal result of the Flood Insurance Study. This map contains the official delineation of flood insurance zones and base flood elevations. Base flood elevation lines show the locations of the expected whole-foot water-surface elevation of the base (100-year) flood. The base flood elevations and zone numbers are used by insurance agents, in conjunction with structure elevations and characteristics, to assign actuarial insurance rates to structures and contents insured under the National Flood Insurance Program.

6.0 OTHER STUDIES

A survey report for water resources in the Passaic River basin yielded data on discharge-frequencies on the Passaic River and its tributaries (Reference 3). The data in that report were coordinated with the results of this study.

Flooded areas resulting from the 1903 flood were delineated by the State of New Jersey (Reference 12). The data presented in this study are consistent with that delineation.

Flood Insurance Studies for the Township of East Hanover and the Borough of North Caldwell have been completed (References 13 and 14). The results of this study are in exact agreement with the results of those studies.

The Flood Insurance Study for the Borough of West Caldwell has also been completed (Reference 15). Due to a more recent analysis on Deepavaal Brook, a small portion of the floodway for this stream extends into West Caldwell. Also, a more recent analysis on Green Brook has resulted in lower elevations in Fairfield at the corporate limits, causing a difference in the results of the studies.

Flood Insurance Studies for the Township of Wayne, the Borough of Lincoln Park, and the Township of Montville are currently being prepared (References 9, 16, and 17). The results of those studies will be in exact agreement with the results of this study.

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7.0 LOCATION OF DATA

Information concerning the pertinent data used in preparation of this study can be obtained by contacting the Natural and Technological Hazards Division, Federal Emergency Management Agency, Regional Director, Region II Office, 26 Federal Plaza, Room 19-100, New York, New York 10278.

8.0 BIBLIOGRAPHY AND REFERENCES

1. State of New Jersey, Bureau of Geology and Topography, The Story of New Jersey's Civil Boundaries, 1606-1968 by John P. Snyder, Trenton, New Jersey, 1969.

2. Richard P. Browne Associates, Drainage Study, Passaic County, New Jersey, Volumes I and II, 1975; Volume III, 1976.

3. U. S. Army Corps of Engineers, New York District, Passaic River Basin, New Jersey and New York, Survey Report for Water Resources, New York, June 1972.

4. U. S. Army Corps of Engineers, New York District, Supplement Report to Passaic River Survey Report for Water Resources Development, New York, April 1973.

5. Water Resources Council, "Guidelines for Determining Flood Flow Frequency", Bulletin 17, Washington, D. C., March 1976.

6. State of New Jersey, Department of Environmental Protection, Division of Water Resources, in cooperation with the U. S. Geological Survey, Special Report 38, Magnitude and Frequency of Floods in New Jersey with Effects of Urbanization by Stephen J. Stankowski, Trenton, New Jersey, 1974.

7. Robinson Aerial Surveys of Newton, New Jersey, Aerial Photographs, Scale 1"=100': Essex County, New Jersey, March 1964.

8. U. S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-2 Water Surface Profiles, Generalized Computer Program, Davis, California, October 1973.

9. Federal Emergency Management Agency, Flood Insurance Study, Township of Wayne, Passaic County, New Jersey (Unpublished).

10. U. S. Army Corps of Engineers, New York District, Topographic Maps, Scale 1"=500', Contour Interval 2 Feet: Township of Fairfield, New Jersey, April 1978.

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11. U. S. Army Corps of Engineers, New York District, Topographic Maps, Scale 1"=200', Contour Interval 2 Feet: Passaic River Basin, New Jersey, April 1978.

12. State of New Jersey, Department of Environmental Protection, Division of Water Resources, Flood Hazard Area Delineation Based on Historic Data, Passaic River Basin, Trenton, New Jersey, March 1973.

13. Federal Emergency Management Agency, Federal Insurance Administration, Flood Insurance Study, Township of East Hanover, Morris County, New Jersey, Washington, D. C., April 16, 1979.

14. Federal Emergency Management Agency, Flood Insurance Study, Borough of North Caldwell, Essex County, New Jersey, Washington, D. C., April 3, 1985.

15. Federal Emergency Management Agency, Federal Insurance Administration, Flood Insurance Study, Borough of West Caldwell, Essex County, New Jersey, Washington, D. C., April 16, 1979.

16. Federal Emergency Management Agency, Flood Insurance Study, Borough of Lincoln Park, Morris County, New Jersey (Unpublished).

17. Federal Emergency Management Agency, Flood Insurance Study, Township of Montville, Morris County, New Jersey (Unpublished).

Morris County, Soil Conservation District, A Study on the Use of Soil Maps for the Interim Delineation of Flood Plains, Morristown, New Jersey, December 1974.

State of New Jersey, Department of Conservation and Economic Development, Division of Water Policy and Supply, Summary Table, Flood High Water Elevations, Upper Passaic River Basin, Trenton, New Jersey, June 1953.

State of New Jersey, Department of Environmental Protection, Division of Water Resources, in cooperation with the U. S. Geological Survey, Special Report 37, Floods of August and September 1971 in New Jersey, Trenton, New Jersey, 1972.

U. S. Army Corps of Engineers, Hydrologic Engineering Center, Floodway Determination Using Computer Program HEC-2, Training Document No. 5, Davis, California, May 1974.

U. S. Department of the Interior, Geological Survey, 7.5-Minute Series Topographic Maps, Scale 1:24,000, Contour Interval 20 Feet: Paterson, New Jersey, 1955, Photorevised 1970; Caldwell, New Jersey, 1955, Photorevised 1970; Pompton Plains, New Jersey, 1955, Photorevised 1970.

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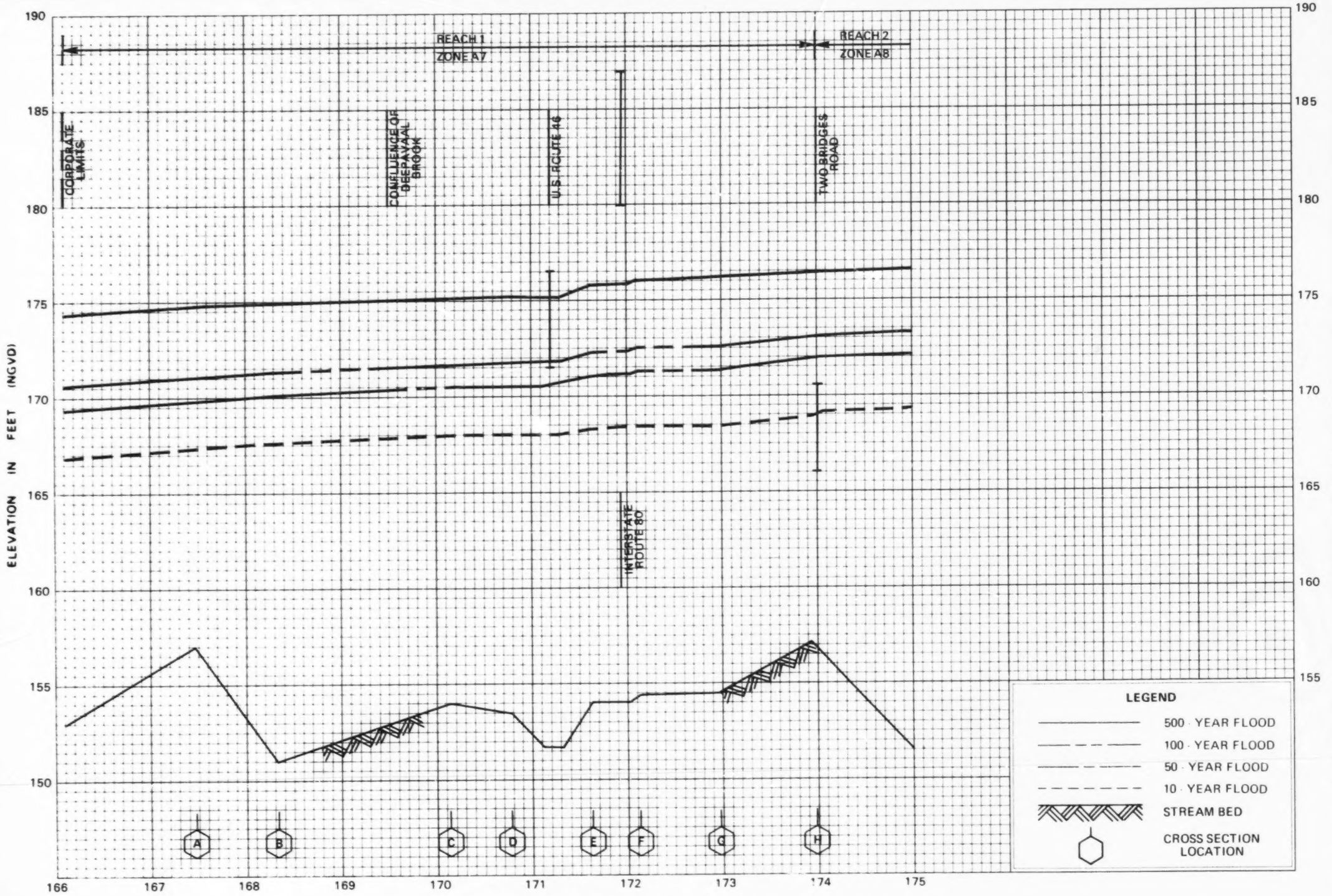

FLOOD PROFILES

PASSAIC RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF FAIRFIELD, NJ

(ESSEX CO.)

01P

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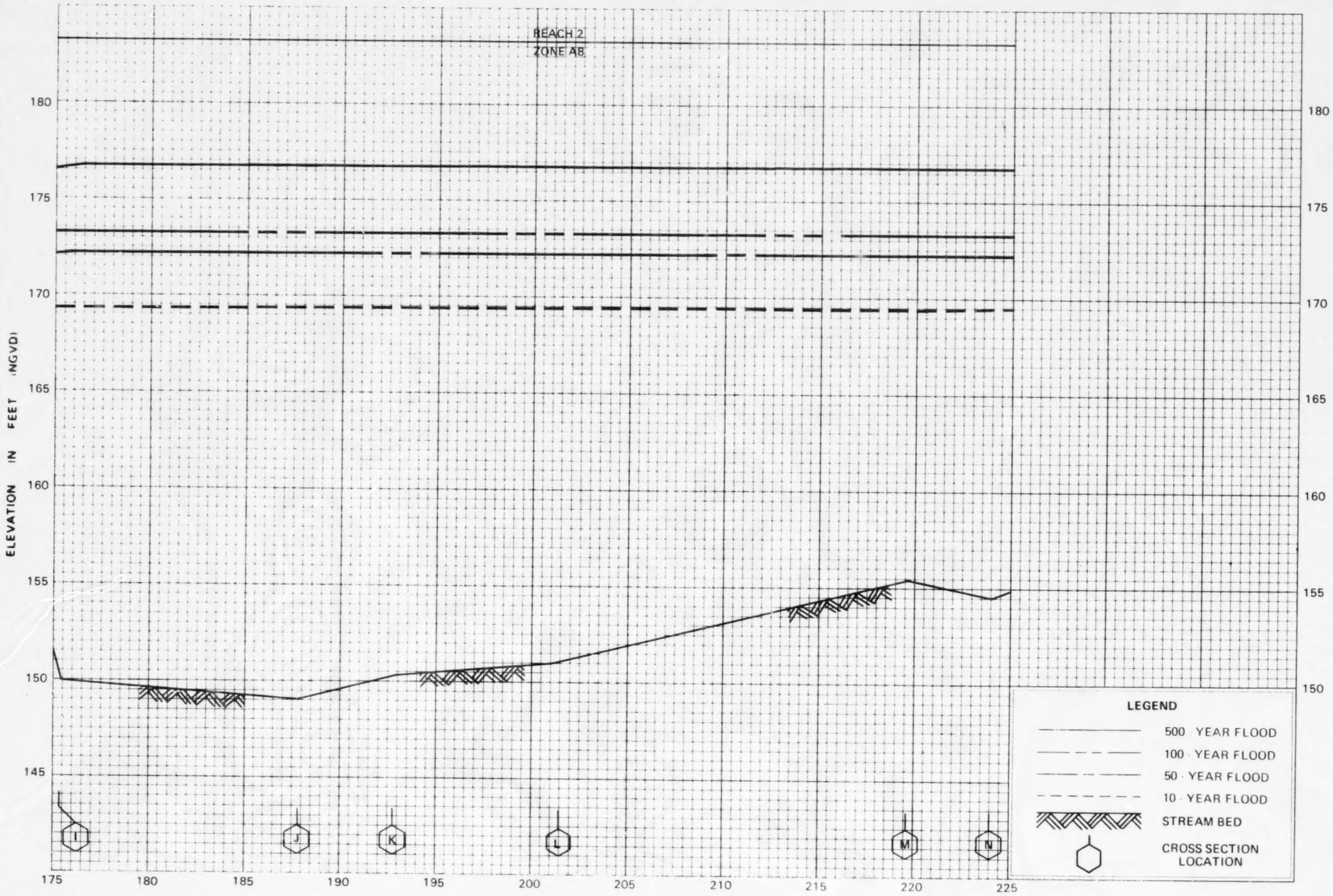

FLOOD PROFILES

PASSAIC RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF FAIRFIELD, NJ

(ESSEX CO.)

02P

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ELEVATION IN FEET (NGVD)

150 155 160 165 170 175 180

225 230 235 240 245

INTERSTATE ROUTE 80

U.S. ROUTE 46

CORPORATE LIMITS

CORPORATE LIMITS

BLOOMFIELD AVENUE

CORPORATE LIMITS

REACH 2
ZONE AE

STREAM DISTANCE IN THOUSANDS OF FEET ABOVE CONFLUENCE WITH NEWARK BAY

LEGEND

500 - YEAR FLOOD

100 - YEAR FLOOD

50 - YEAR FLOOD

10 - YEAR FLOOD

STREAM BED

CROSS SECTION LOCATION

03P	FEDERAL EMERGENCY MANAGEMENT AGENCY TOWNSHIP OF FAIRFIELD, NJ (ESSEX CO.)	FLOOD PROFILES PASSAIC RIVER

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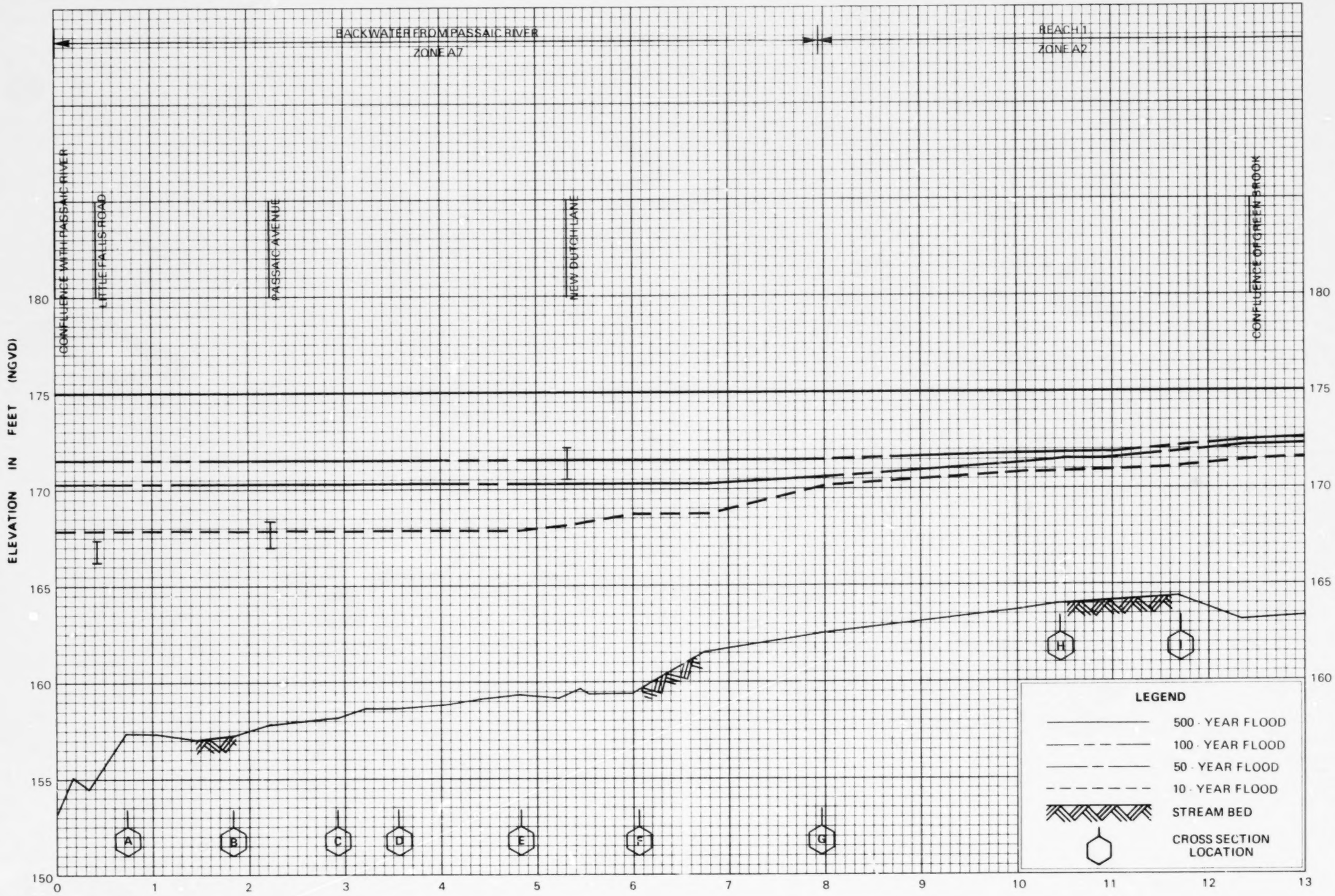

FLOOD PROFILES

DEEPAVAAL BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF FAIRFIELD, NJ

(ESSEX CO.)

04P

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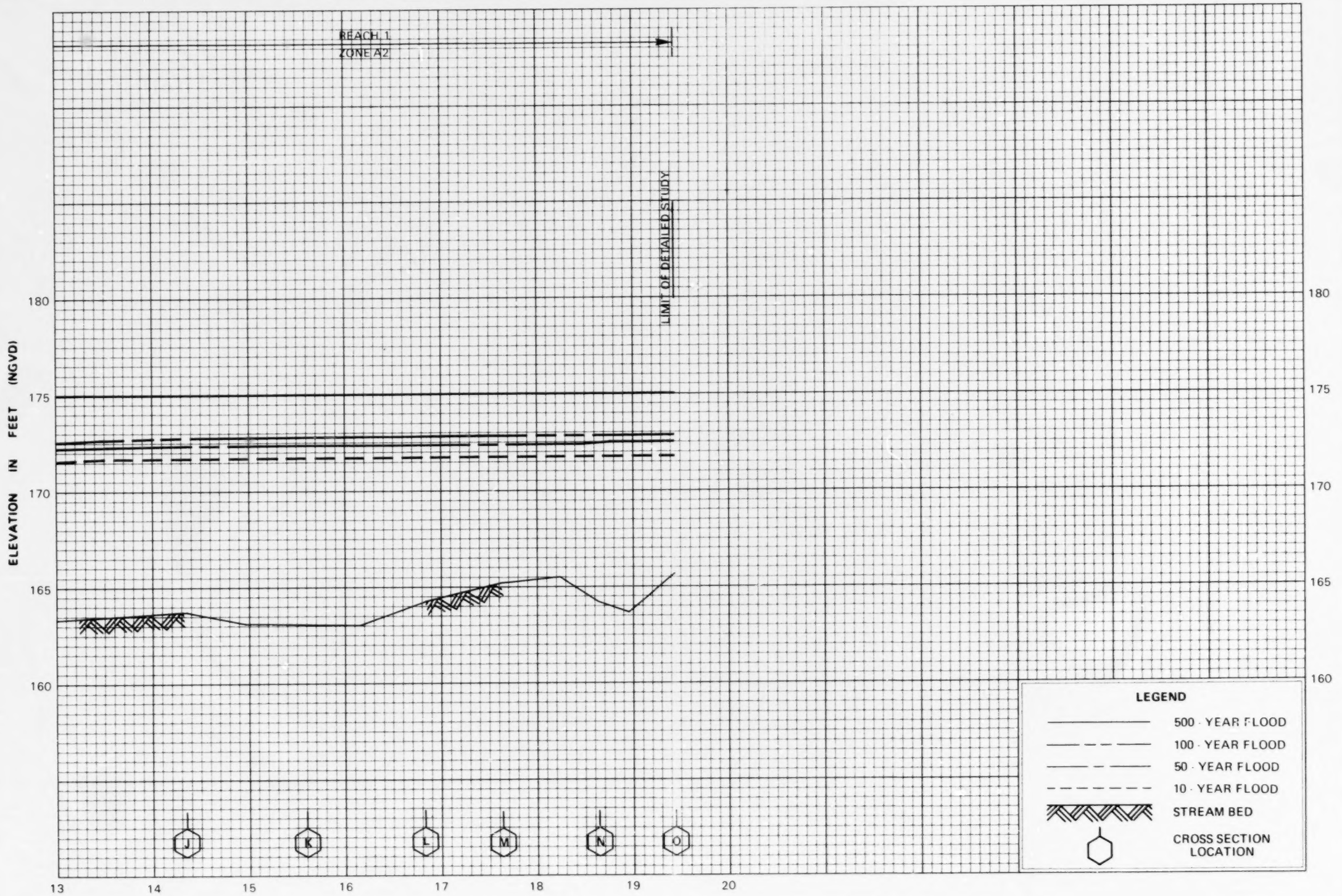

FLOOD PROFILES

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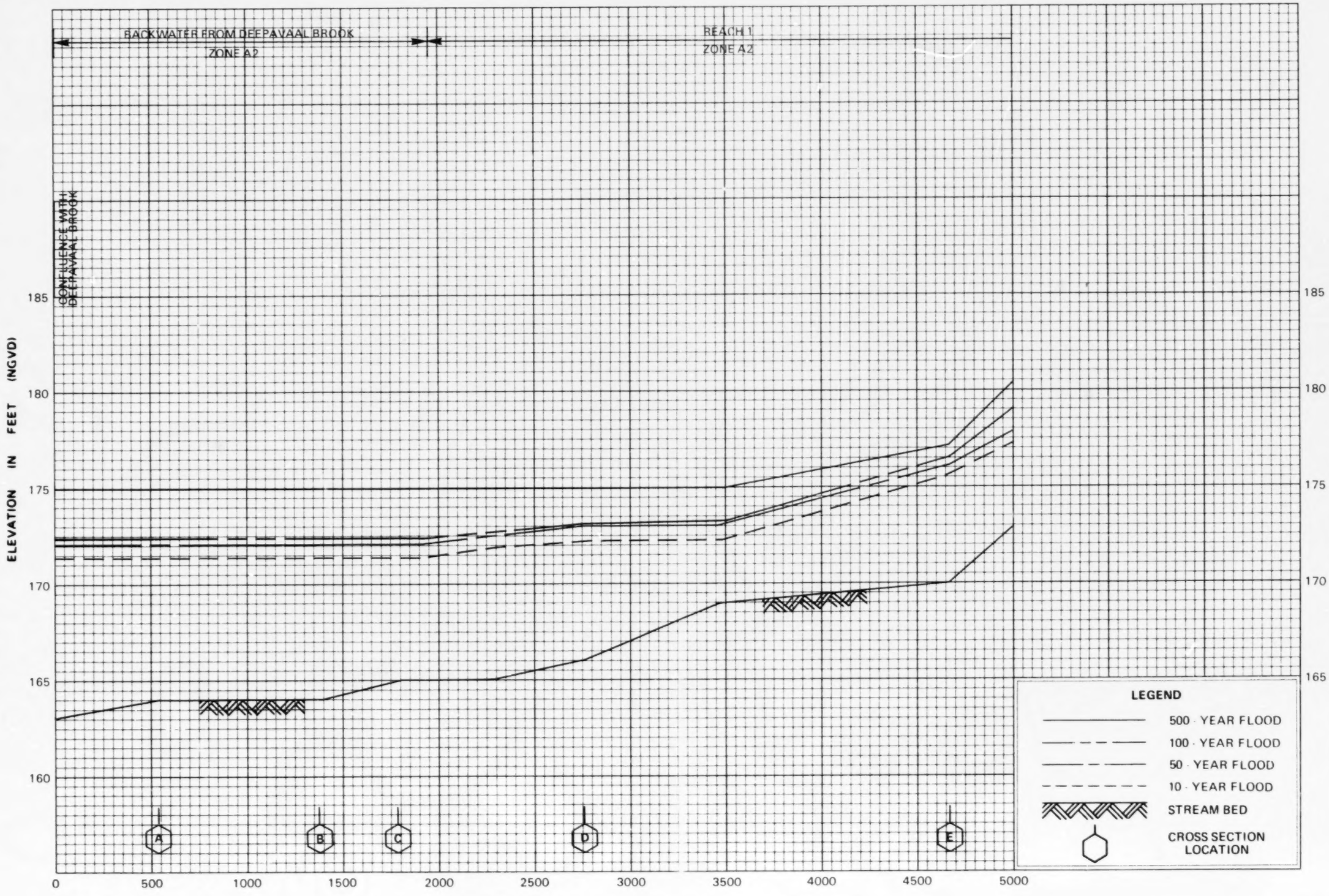

FLOOD PROFILES

GREEN BROOK

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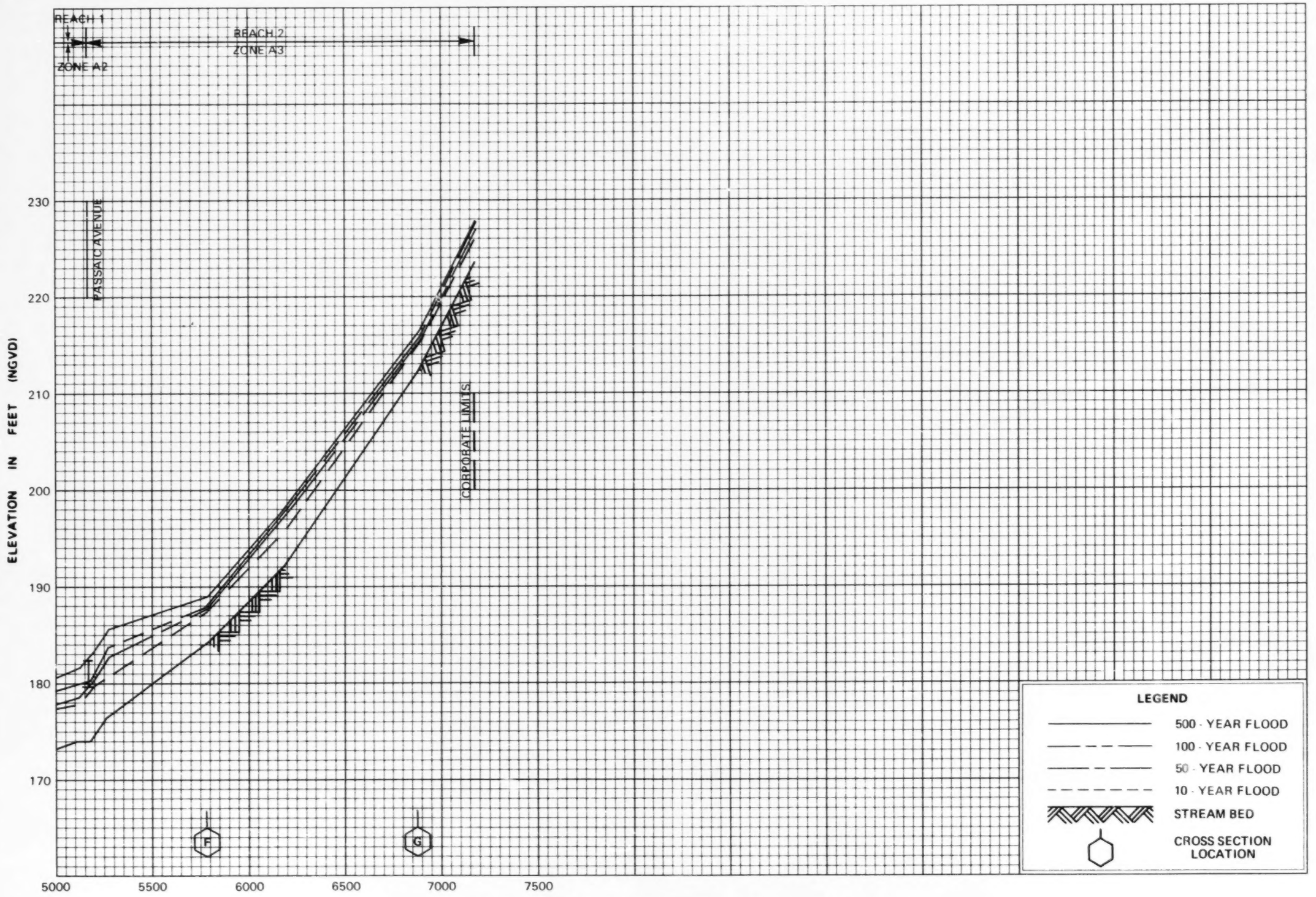

FLOOD PROFILES

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